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SHORT REPORT

Endovascular Repair of Post-traumatic Inferior Pancreatico-duodenal Pseudoaneurysm following Blunt Abdominal Sporting Injury

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Introduction

Mesenteric arterial pseudoaneurysm formation is a rare sequel of blunt abdominal trauma. This serious complication is very difficult to deal with in the presence of gross bacterial contamination and multiple organ failure. We report a case of pancreaticoduodenal arterial pseudoaneurysm formation in association with a retroperitoneal abscess following a sporting injury. A successful outcome was achieved with an endovascular approach.

Case Report

A 19-year-old male was struck in the epigastrium while playing the field sport of Gaelic hurling and was admitted to a nearby hospital. The patient complained of only mild epigastric pain but was found to have a serum amylase of 538 iu/l. Physical examination was normal and he had normal plain radiographs of the abdomen and chest. After observation for 36 hours, the patient developed peritoneal signs and an abdominal CT scan revealed free fluid and retroperitoneal gas. A diagnosis of hollow viscus injury was made and the patient was transferred to our institution for further management.

The patient underwent emergency laparotomy where a Grade III injury of the duodenum was discovered and treated with primary closure and a jejunal serosal patch. There was widespread peritoneal contamination and a temporary vacuum pack closure was employed to prevent abdominal compartment syndrome. In the postoperative period, the patient developed multiple organ failure and a duodenal fistula, but progressed steadily until, on the ninth postoperative day, he had an episode of massive haematemesis and further haemorrhage from his wound.

Abdominal CT scan showed a large retroperitoneal abscess but no arterial pseudoaneurysm. Subsequently, coeliac axis angiography was performed via a right common femoral artery approach. The superior mesenteric artery was cannulated with a 7 Fr guidelink catheter and baseline angiography showed a pseudoaneurysm of the inferior pancreaticoduodenal artery

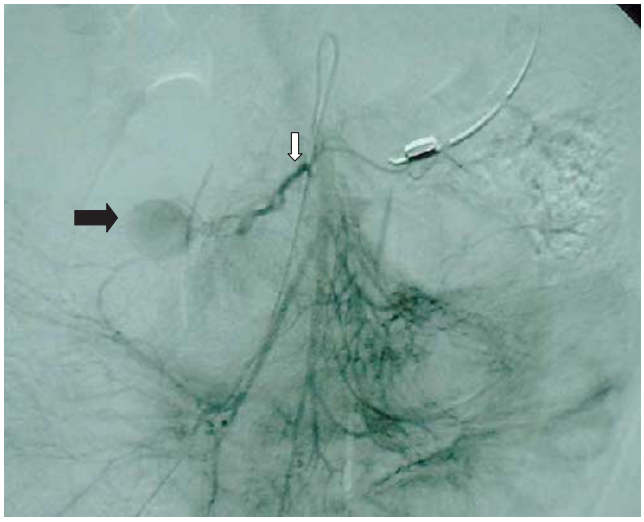

Fig. 1. Coeliac axis angiography performed via a right common femoral approach demonstrates a pseudoaneurysm of the inferior pancreaticoduodenal artery (black arrow).

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Fig. 2. Repeat coeliac axis angiography following embolisation of the pseudoaneurysm. After 10 minutes the pseudoaneurysm cavity is completely occluded. This was confirmed by duplex ultrasonography.

(Fig. 1). The inferior pancreaticoduodenal artery was cannulated with a 5 Fr Simmons catheter and Gelfoam pledgets were used to embolise the vessel. Repeat angiography after 10 minutes showed complete occlusion of the pseudoaneurysm (Fig. 2) and follow-up duplex ultrasound confirmed loss of Doppler signal within this area. The patient subsequently underwent percutaneous drainage of the retroperitoneal abscess collection and made an uneventful recovery with spontaneous resolution of the duodenal fistula. He remains well one year later.

Discussion

Our case illustrates an association between duodenal laceration and inferior pancreaticoduodenal arterial pseudoaneurysm following blunt trauma. This has not been previously described following a blunt sporting injury. The association of acute pancreatitis with pseudoaneurysm formation in patients following blunt trauma has been well documented.[1,2] It is not clear whether the development of this pseudoaneurysm in this case was due to associated pancreatic injury or related to erosion and sepsis from the duodenal fistula. The initial hyperamylasaemia on admission quickly normalised and at laparotomy there was no visible pancreatic injury.

There is a high incidence of operative mortality in patients who experience rupture of their PDA aneurysms, up to 50% in some series.[3] Endovascular pseudoaneurysm repair has the potential to reduce the morbidity and mortality of conventional surgical procedures and obviates the need for surgical exposure and cross-clamping, which are both obligatory during direct repair. We chose an endovascular route to embolise the leaking pseudoaneurysm because of limited conventional surgical access due to granulation tissue beneath the temporary abdominal closure. The pseudoaneurysm was embolised first because of the potential for disaster if the pseudoaneurysm cavity had been disrupted in an attempt to drain the abscess. Endovascular pseudoaneurysm repair is technically challenging, and is not free of complications including rupture, dissection, and immediate or late occlusion.

In our patient, there were no complications at a follow-up of one year. We believe that in selected cases, endovascular pseudoaneurysm repair offers an attractive alternative to patients who have severe co-morbidity.

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